



# MOTHER TERESA

## INSTITUTE OF SCIENCE AND TECHNOLOGY

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### DEPARTMENT OF CIVIL ENGINEERING

ACADEMIC YEAR: 2019-20

### A SUMMARY REPORT

**Course Name:** FOUNDATION ENGINEERING

**Name of the Resource Person:** Mr. E. Prudvi Raj, Nagpur Metro Railways, Nagpur

**Gap Identified:** Stabilization of Expansive Soil and Soil Exploration Report

**No. of Students attended:** 37 members.

**Summary:** On the day of the session (i.e 16-09-2019) Mr. E. Prudvi Raj, Nagpur Metro Railways, Nagpur, delivered a lecture on the basics of Introduction to the course of Foundation Engineering. Delivered a lecture on Expansive soil or clay is considered to be one of the more problematic soils and it causes damage to various civil engineering structures because of its swelling and shrinking potential when it comes into contact with water. Expansive soils behave differently from other normal soils due to their tendency to swell and shrink. Because of this swelling and shrinking behavior, expansive soils may cause the following problems in structures or construction projects. Structural damage to lightweight structures such as sidewalks and driveways Lifting of buildings, damage to basements, and building settlement. Cracks in walls and ceilings. Damage to pipelines and other public utilities Lateral movement of foundations and retaining walls due to pressure exerted on vertical walls Loss of residual shear strength causing instability of slopes, etc. Therefore it is essential to check for the presence of expansive soil and a suitable treatment method should be adopted before commencing any construction projects.

In the afternoon session, he explained the practical exposure of soil exploration report in some cases post construction treatment of expansive soil may be required if the situation has not been deals with before construction. Although information on the soil exposed at the ground surface is very valuable, geotechnical engineers also need to evaluate the sub-surface conditions by taking samples by boring or by digging exploratory pits. These activities are called subsurface exploration. The extent of exploration depends on the importance of the structure, the complexity of the soil conditions and the budget available for exploration.

A detail soil exploration programme involves deep boring, field tests and laboratory tests for determination of different properties of soils required for the design of any structure.



- (i) To determine the basic properties of soil which affect the design and safety of structure i.e., compressibility, strength and hydrological conditions.
- (ii) To determine the extent and properties of the material to be used for construction.
- (iii) To determine the condition of groundwater.
- (iv) To analyse the causes of failure of existing works.

The nature and extent of soil exploration depends upon the ultimate use to which the results of the investigation will be applied. For example, for structures which transmit heavy load on the soil, the aim of soil exploration is to provide data which will help in the selection of proper types of foundation, its location and design of foundations.